REMARKS

Claims 1-33 are pending in the application.

Claims 1-12 and 32-33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over "Adaptive Beamforming of ESPAR Antenna Based on Steepest Gradient Algorithm" by Cheng et al. in view of "Performance and Configuration of M-CMA (Modified Constant Modulus Algorithm) Adaptive Array Using Polyphase Filters" by Denno et al., and further in view of U.S. Patent No. 6,498,804 to Ide et al.; claims 13-31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al. in view of Denno et al., Ide et al., and further in view of U.S. Patent No. 6,369,758 to Zhang. Applicants respectfully traverse the rejections.

Again, the Examiner acknowledged that Cheng et al. do not teach, among other things, selecting, from among the diversity branches, a branch outputting a largest signal level or a highest signal quality, and obtaining a predetermined evaluation function with respect to each of a plurality of weighting coefficients to be applied to incoming signals arriving at a plurality of antenna elements of the selected branch, by perturbing each of said plurality of weighting coefficients at a sampling interval which is within one symbol time. And again, the Examiner relied upon Denno et al. as allegedly teaching perturbing each of said plurality of weighting coefficients at a sampling interval which is within one symbol time.

The Examiner relied upon newly-cited Ide et al. as allegedly teaching selecting a branch outputting a largest signal level or a highest signal quality.

Once again, Cheng et al. describe perturbing one passive antenna element for every one symbol, and in order to update the reactance value of each of the passive antenna elements, Cheng et al. require a number of symbols amounting to the number of passive antenna elements. And as acknowledged by the Examiner, Cheng et al. do not teach or

suggest obtaining a predetermined evaluation function with respect to each of a plurality of weighting coefficients to be applied to incoming signals arriving at a plurality of antenna elements of a selected branch, by perturbing each of said plurality of weighting coefficients at a sampling interval which is within one symbol time. Thus, there is no motivation or suggestion, other than by improper hindsight from the claimed invention itself, to combine Cheng et al. with Denno et al. and Ide et al.

Furthermore, Cheng et al., Denno et al. and Ide et al. all fail to teach or suggest, among other things, adjusting, only with respect to the selected branch (which is selected from among the diversity branches formed by the plurality of array antenna parts), each of said plurality weighting coefficients based on the evaluation function so as to update said plurality of weighting coefficients.

Ide et al., as cited and relied upon by the Examiner, only describe weight coefficients of all diversity reception circuits having corresponding weight update coefficients.

> "The weights (weighting coefficients) at diversity reception circuits 113 to 115 at this time are W1, W2, and W3, and the weight update coefficients are μ1, μ2 and μ3, respectively..."; and
> "...a plurality of diversity reception circuits with different weight update coefficients operate independently and adaptively to the environment..." Col. 6, lines 42-44 and lines 5-8 of Ide et al. (Emphasis added)

And correspondingly, Ide et al. only describe assigning the weight of the selected diversity reception circuit to a non-selected diversity reception circuit.

> "Selector 117 finds the reception quality of S1(t), S2(t) and S3(t), compares them and selects signal Si(t) ($1 \leq i \leq 3$) of the best reception quality.
> Then, coefficient assignment control circuit 201 assigns the weight (one of W1 to W3) of the diversity reception circuit corresponding to Si(t) selected by selector 117 to a non-selected diversity reception circuit." Col. 6, lines 46-52 of Ide et al. (Emphasis added)

Thus, the Examiner clearly exercised improper hindsight by using the claimed invention as a blueprint for combining and modifying the disparate features from the cited references. And, indeed, the cited portions of Ide et al. directly teach away from the claimed feature of adjusting weighting coefficients only with respect to a selected branch.

Ide et al. also describe an "Embodiment 3" of operating only a diversity reception circuit with a fast converging weight update coefficient. But Ide et al. only describe such an operation as part of a "2-stage control" technique where weight value convergence for the solely operated diversity reception circuit is detected for the explicit purpose of updating the weights of the other diversity reception circuits. And Ide et al. only describe thereafter selecting an "output with the best quality." Figs. 5-6 and col. 7, line 37 to col. 8, line 28 of Ide et al.

Therefore, even assuming, arguendo, that it would have been obvious to one skilled in the art at the time the claimed invention was made to combine Cheng et al., Denno et al., and Ide et al., such a combination would have, at most, suggested updating weighting coefficients of all diversity branches or updating a non-selected diversity branch to conform with a selected diversity branch. Such a combination would, thus, still have, at least, failed to disclose or suggest selecting one of a plurality of diversity branches that outputs a largest signal level or a highest signal quality, and adjusting the weighting coefficients only with respect to the selected branch.

In other words, even assuming, arguendo, that it would have been obvious to one skilled in the art at the time the claimed invention was made to combine Cheng et al., Denno et al., and Ide et al. such a combination would still have failed to disclose or suggest,

> "[a] method of controlling a plurality of array antenna parts forming diversity branches, each array antenna part having a plurality of antenna elements arranged at a predetermined interval, comprising:

selecting, from among the diversity branches, a branch outputting a largest signal level or a highest signal quality;

obtaining a predetermined evaluation function with respect to each of a plurality of weighting coefficients to be applied to incoming signals arriving at a plurality of antenna elements of the selected branch, by perturbing each of said plurality of weighting coefficients at a sampling interval which is within one symbol time; and

adjusting, ***only with respect to the selected branch***, each of said plurality of weighting coefficients based on the evaluation function so as to update said plurality of weighting coefficients," as recited in claim 1. (Emphasis added)

Accordingly, Applicants respectfully submit that claim 1, together with claims 2-3 dependent therefrom, is patentable over Cheng et al., Denno et al., and Ide et al. separately and in combination, for at least the foregoing reasons. Claims 4 and 32-33 incorporate features that correspond to those of claim 1 cited above, and are, therefore, together with claims 5-12 dependent from claim 4, patentable over the cited references for at least the same reasons. The Examiner cited and relied upon Zhang as a further combining reference to specifically address the additional features recited in dependent claims 13-31. As such, a further combination with this reference would still have failed to cure the above-described deficiencies of Cheng et al., Denno et al., and Ide et al., even assuming, arguendo, that such a combination would have been obvious to one skilled in the art at the time the claimed invention was made. Accordingly, Applicants respectfully submit that claims 13-31, which depend from claim 4, are patentable over the cited references for at least the foregoing reasons.

In view of the remarks set forth above, this application is in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,

/Dexter T. Chang/
Dexter T. Chang
Reg. No. 44,071

CUSTOMER NUMBER 026304
Telephone: (212) 940-6384
Fax: (212) 940-8986 or 8987
Docket No.: FUJI 20.846 (100794-00531)
DTC:tb